

GERMAN ANTHROPOLOGICAL PAPERS.

THE two volumes, xciii. and xciv., of *Globus* for 1908 are especially interesting for the numbers of papers dealing with South American ethnography. The more important of these are:—Dr. T. Koch-Grunberg's articles on fishing and hunting among the natives of north-west Brazil, in which the implements employed are fully and carefully illustrated; the arrow release is described, and details given of large communal fish-traps and private tackle, the blow-pipe, arrow-poison, and a variety of weapons in use on the Upper Amazon tributaries. G. von Koenigswald's series of papers on certain tribes of southern Brazil deal somewhat briefly with the Boto-cudos, and more exhaustively with the Cayuas, a nomadic hunting tribe of the Guarani family. Weapons, lip-ornaments, physical types, and other points are figured. Freiherr von Nordenskiöld contributes an account, with carefully executed figures, on tobacco-pipes of South America. He concludes that they occurred sporadically before the *Discovery*. The tubular pipe, the most primitive form, is discussed and compared with the North American varieties. H. Beyer gives an account of the Mexican "dragon," in which he states that the god Quetzalcoatl, who is identical with Xiuhcoatl, is represented not only as human, but as a feathered snake. He is the most important deity in Mexico. The feathered snake was probably a sign of the ecliptic or of the zodiac, and Quetzalcoatl would thus be not only the deity of time, but also, like Xiuhcoatl, the symbol of the year.

T. von Koenigswald's series of articles is continued in vol. xciv., valuable and copiously illustrated descriptions being given of the Coróados and Carayas, hunting, fishing, and agricultural tribes who have resisted European influence to a very large extent. Prof. V. Giuffrida-Ruggeri, of Naples, gives an account of Florentino Ameghino's discoveries in Patagonia, which point to South America as the home of the "half-apes." He discusses the remains of the various strata, but says that the question must now be left for geologists to decide. He defines the genus *Homunculus*, and figures the skull of *Homo pampaeus ameghinoi*.

The German colonies are represented in vol. xciii. by well-illustrated papers by Dr. R. Pösch on New Mecklenburg (New Ireland) and Kaiser Wilhelm's Land. As regards Africa, negro music and musical instruments in Togo are described in two papers by Smend, in which variations in the musical bow, primitive harp, drum, and trumpet are described and figured. An account is given by Missionary B. Gutmann of curses and blessings of the Wadschagga. Dr. H. Krauss contributes an illustrated article on the household utensils of the German East African coast negroes. Vol. xciv. contains a brief description (with figures) by Missionary C. Spiess of the secret Yevhe and Sê cults among the Èvhe of the Guinea Coast. The origin of these mysterious objects, possessed of magical significance, has not yet been ascertained. B. Struck describes and figures some of the really able topographical efforts of King Ndschoya, of Bamum, West Africa. The Jabim shields of German New Guinea are described by B. Geisler, with illustrations of the method of giving a permanent warp to the shield and of the ornamentations on it. The hitherto uninvestigated natives of the Tanga Islands, off New Mecklenburg, are the subject of a short illustrated paper by Dr. O. Schlaginhaufen.

Europe is not neglected. To vol. xciii. Dr. A. Baldacci contributes an account of the Slavs of Molise (central Italy), and Dr. M. L. Wagner gives notes of a trip in Sardinia (continued in vol. xciv.). An appreciation is given by H. Seidel of Robert Townson, an eighteenth-century traveller in the Tatra, Hungary.

Vol. xciv. contains a beautifully produced copy of Sebastian Münster's map of Germany, recently brought to light after long oblivion; Dr. A. Wolkenhauer gives a most interesting explanation of the astronomical devices with which the sixteenth-century topographer and astrologist accompanies his map. In the same volume Dr. V. Lazár contributes an account of marriage customs among the southern Roumanians.

As regards Asia, in vol. xciii. F. Grabowsky gives an interesting account of rice-culture among the Dayaks of

south-east Borneo. In vol. xciv. we have a description by Prof. G. Behaghel of his travels in the Chinese province of Fokien. Dr. Ten Kate furnishes further points of Japanese popular belief in regard to omens, dreams, astrology, and mythology. Dr. M. Moszkowski gives a short illustrated account of the modified Danigala and Hennebedda Veddas, and a more detailed description of the inland tribes of east Sumatra.

Among the folk-lore articles in vol. xciii. mention must be made of Dr. Emil Fischer's description of the Paparuda procession among the Roumanian peasants, which takes place on the third Tuesday after Easter or after continued drought, when girls go round the village singing the rain-song. He cites another instance of southern Slav influence in the Scaloian procession, when children, mostly girls, form a mock funeral procession about a clay figure in a coffin, singing a dirge; the Scalo, of which an illustration is given, is supposed to personify the drought which will end with its funeral. Prof. Mehlis describes the "Hexenhammer" of Dörrenbach (Palatinat) and other Neolithic implements still associated with thunder and magic by the peasants of those parts; he also alludes to the nomenclature of these objects in the Greek and Roman authors.

For Africa other than the German colonies, reference must be made to F. J. Bieber's paper in vol. xciii., on the political organisation of Kaffa, which lies in the south-west corner of the north-east African highlands, north of Lake Rudolf. With regard to Australia, vol. xciv. contains an account, by Frh. v. Leonhardi, of dog-figures of the Dieri tribe in central Australia; they are painted red and black, and are thought to represent the dogs of various tribal ancestors. These animal figures are apparently unknown among the neighbouring Aranda and Loritja tribes.

Of general interest are Dr. J. H. F. Kohlbrugge's discussion of red hair and its significance in vol. xciii. He compares the occurrence of erythrisms and albinism in mammals and man, and discusses the question of pigmentation. In conclusion, he expresses the hope that the question may be more thoroughly investigated in the future, and alludes to E. Fischer's work on the subject, published after his article was written. In vol. xciv. Dr. C. Kassner gives a number of illustrations, with brief descriptions, of Bulgarian clapping-boards, salt-mill, wells, church taper-stand, and a variety of objects of antiquarian interest. Dr. S. Weissenberg discusses the problem of growth in human beings according to age, sex, and race. Tables are given illustrating the comparative annual growth of both sexes, of Jew and Jewess, Russian boy and girl, English boy and girl, Belgians, also of annual increase in weight, height, and size according to external circumstances. In conclusion, he points out that the third period of life, from ten or twelve to seventeen or eighteen years of age, is the crucial time of development, as it is then that racial, sex, and individual differentiation sets in.

NEW CRUCIBLE SUPPORT AND FURNACE.

MESSRS. J. J. GRIFFIN AND SONS, LTD., have sent us for examination a universal crucible support. It consists of three iron rods, which pass obliquely through the legs of an iron tripod and are held firmly in the correct positions by the action of brass springs. The three rods have fitted over them quartz tubes drawn out into pointed ends. By simply pushing in or drawing out the rods can be adjusted to take either small or large crucibles—up to three inches in diameter. Quartz fusing at a higher temperature than platinum, this crucible support is very handy, and is much cheaper than using a platinum tripod. The heating of the crucible is also more uniform, as it is held in position simply by the pointed ends of the quartz tubes. There is therefore no necessity to turn the crucible about in order to make sure that the whole of its contents are completely and uniformly ignited.

We have received from the Cambridge Scientific Instrument Company a small crucible furnace heated with a Méker burner, and called the Méker furnace. We have tested the furnace and find it very efficient, as within a few minutes there is no difficulty in melting copper. The main features of the new burner are the careful and exact pro-

portioning of the size of the air inlet holes and of the gas injector, thus causing a perfect mixing of the air and gas for combustion. The lower part of the burner is constricted and the upper part enlarged so as to allow a thorough mixing of the gas and air before combustion. The top part of the burner is furnished with a deep nickel grid to prevent back-flashing of the flame. This nickel grid is of very stout make, and is about 1 cm. deep, thus making it practically impossible for the flame to flash back. Although the burner gives a very hot flame, the amount of gas used is by no means excessive, and as metals are very rapidly melted, and other operations, such as fusion and reduction, carried out very quickly, the gas consumption for a given operation is less than with other burners.

One of the greatest advantages is that, by using the Méker burner, operations which used to require a large amount of leg-work with the blow-pipe can now be carried out without employing a blow-pipe at all. In order to obtain very high temperatures another form of the Méker burner is arranged for use with the blow-pipe or compressed air.

These burners are made in a large variety of sizes and shapes, and from our experience with them we shall expect to see them largely employed in the future.

THE DEFECTS OF ENGLISH TECHNICAL EDUCATION AND THE REMEDY.¹

WHEN writing the paper which I am going to read to you I have rarely been free from the oppressive thought that many of my audience will justly consider it forwardness, bordering even on arrogance, on my part to lecture to an association of English technical teachers on the defects of English technical education. Not only have I been interested in this subject merely for a few years, whereas many of my audience have spent a lifetime in it, but I am not an Englishman myself.

Your secretary, however, insisted that the exceptional opportunities which I have had of becoming acquainted with technical education as it affects, not only the lecturer and the student, but also the employer of labour, in this country as well as in Germany, would carry weight with you and would assure your serious consideration of my views; but further, standing as I do outside the teaching profession, and having no private interests to serve, I thought that, whatever criticism I might experience, I should not be suspected of any ulterior motive if I came forward to point out what, to my mind, are the weaknesses and faults of our present system, and to advocate what appears to me the only right course to adopt. So I accepted your secretary's invitation, and will, with your permission, now proceed to place my somewhat unconventional views before you.

The importance of technical education for any modern nation, but most particularly for England, cannot easily be overestimated, a fact which is being pointed out so frequently and acknowledged so generally that I need not dwell upon it at any length. There is not a student of national economy who fails to realise that Germany and the United States, now serious rivals to English trade, owe their rapid industrial and commercial development largely to the magnificent system of technical education which they have established.

Indeed, the recognition of this fact by all thoughtful men has led to vigorous efforts being made during the last ten years or so, and to a prodigious amount of money now being annually spent in this country for the purposes under discussion.

No one will deny that a very great deal has been accomplished, and personally I should be the last to underestimate the value of the work now being done in numerous institutions, or to belittle the services of so many pioneers, to whom, indeed, the nation owes a debt of gratitude. Nevertheless, it must be, and is, widely recognised that technical education is only in its infancy, that it is as yet far from exercising to the full and in an efficient

manner that propelling influence on the industries of the country which is its aim and duty.

Almost invariably, however, when this fact is recognised and pointed out, on whatever occasion it may be, the conclusion is drawn from it that the people of England must be prepared to spend more money in erecting and thoroughly equipping technical colleges and universities.

The main object of this paper is to prove the fallacy of that conclusion, and that every new college erected is another stone round the neck of technical education. It is, in my opinion, certainly not lack of money which is to blame for the admittedly unsatisfactory state of affairs. From the statistical data contained in the Government Blue-books and Budgets I have made a calculation as to the total expenditure of public money in England and Wales as compared with Prussia. The two countries are similar in industrial activity and in the character of their population. Prussia, with its highly efficient educational system and its technical institutions admired by all the world, spends roughly 600,000l. per annum on current expenditure. The statistics available for England, particularly as to local contributions, are rather scanty, but from a very moderate estimate I find that at least 1,000,000l. is annually spent for equivalent purposes. Taking into account the larger population of Prussia, we arrive at the result that England already spends about twice as much money as Prussia, reckoned per head of population, with educational results which—I say it without hesitation—will not bear any comparison. If one would compare the extraordinary expenditure incurred in building and equipping new institutions, the result, I believe, would be even more unfavourable to England.

Neither lack of money nor of effort is the fault, but the fundamental principle is wrong on which rests the whole structure of technical training in this country.

Technical education is not a private or local, but by its very nature a national affair, and the most essential condition for efficiency and economy is that it should be established on the basis of systematic national organisation, and that it should be nationally managed.

The numerous objections raised by employers and the general public against technical colleges, and the still more numerous grievances of those actively engaged in technical training, are largely, if not solely, connected with the present unsound foundation.

With the object of proving the truth of these sweeping statements, let us briefly consider what are the complaints I refer to.

(1) The number of day students in all institutions, and consequently the attendance at the majority of classes, is far too small. Taking the figures given by the British Education Section of the Franco-British Exhibition for 1908, there were in England and Wales forty-five technical and agricultural colleges, with a total attendance of 3344 day students. This corresponds to an average of seventy-five students per college, or approximately six students per class. These figures do not include the technical students of universities and university colleges, but, nevertheless, the facts are even worse, because the large number of smaller technical institutions providing for day instruction is omitted from the list, and the preponderance of students in the first-year courses must also be kept in mind; and, further, even in the largest colleges, in such institutions as the Birmingham University and the Manchester Municipal School of Technology, the attendance of day students bears no proportion to the cost of their beautiful equipments. Manchester, for instance, reports a total attendance in all departments of 165 full-course day students during the present session. In numerous institutions it is by no means an exception to find classes, especially in more advanced subjects, consisting of two or three students, and many classes only exist on paper, there being no students at all to take advantage of the facilities offered to them.

(2) The average education of day students entering for technical instruction is poor, and the diversity of their previous training so great, that the gravest educational difficulties result. This is only partly due to the unsatisfactory state of primary and secondary education. The

¹ Paper read before the Association of Teachers in Technical Institutions (West Yorkshire branch) in Huddersfield, on March 27, by Dr. Robert Pohl.